

## CLAIMS

What is claimed is:

1 i. An adapter that comprises:

2 a lane receiver configured to receive a differential signal on a differential pair of  
3 conductors, and configured to convert the differential signal into a sequence of code  
4 symbols;

5 a decoder configured to decode the sequence of code symbols to produce a sequence of  
6 received symbols; and

7 a circuit configured to determine if the sequence of received symbols is incorrect due to  
8 inversion of the differential signal, wherein the lane receiver is configured to  
9 correct for inversion of the differential signal if the circuit determines inversion  
10 exists.

1 2. The adapter of claim 1, wherein the decoder decodes <sup>the</sup> code symbols from a running-  
2 disparity code having a positive running disparity symbol and a negative running disparity symbol  
3 for each input symbol.

1 3. The adapter of claim 2, wherein the circuit is configured to examine a decoded training  
2 sequence having a start symbol and a training symbol to determine if inversion exists.

1 4. The adapter of claim 3, wherein the start symbol has a positive running disparity symbol  
2 that is the inverse of the negative running disparity symbol for the start symbol.

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1 5. The adapter of claim 3, wherein the inverse of the positive running disparity symbol for the  
2 training symbol decodes to a symbol different than the training symbol, and wherein the inverse of  
3 the negative running disparity symbol decodes to a symbol different than the training symbol.

1 6. The adapter of claim 5, wherein the circuit locates the start symbol, identifies the training  
2 symbol relative to the start symbol, determines if the training symbol has an incorrect value  
3 corresponding to the inverse of the positive or negative running disparity symbol for the training  
4 symbol.

1 7. The adapter of claim 6, wherein the circuit toggles correction of differential signal  
2 inversion if the training symbol has an incorrect value corresponding to the inverse of the positive  
3 or negative running disparity symbol for the training symbol.

1 8. The adapter of claim 1, wherein the decoder is an 8B/10B code decoder.

1 9. The adapter of claim 1, further comprising:  
2 a second lane receiver configured to receive a second differential signal on a second  
3 differential pair of conductors, and configured to convert the second differential  
4 signal into a second sequence of code symbols; and  
5 a second decoder configured to decode the second sequence of code symbols to produce a  
6 second sequence of received symbols,  
7 wherein the circuit is further configured to determine if the second sequence of received  
8 symbols is incorrect due to inversion of the second differential signal, wherein the

9 second lane receiver is configured to correct for inversion of the second differential  
10 signal if the circuit determines inversion exists.

1 10. The adapter of claim 9, wherein the circuit is configured to combine the sequences of  
2 received symbols to produce an output symbol stream.

1 11. A method of correcting for differential signal inversion, wherein the method comprises:  
2 converting a differential signal into a sequence of code symbols;  
3 decoding the sequence of code symbols to form a sequence of received symbols; and  
4 determining if the sequence of received symbols is incorrect due to inversion of the  
5 differential signal.

1 12. The method of claim 11, further comprising:  
2 inverting the sequence of code symbols if inversion is determined.

1 13. The method of claim 11, wherein the code symbols are determined according to a running  
2 disparity code having a positive running disparity symbol and a negative running disparity symbol  
3 corresponding to each input symbol.

1 14. The method of claim 13, and wherein the determining includes:  
2 identifying a training symbol sequence in the sequence of received symbols, said training  
3 symbol sequence having a start symbol and a training symbol.

1 15. The method of claim 14, wherein the start symbol has a positive running disparity code  
2 symbol that is the inverse of the negative running disparity code symbol for the start symbol, and  
3 wherein the inverse of the positive and negative running disparity symbols for the training symbol  
4 decode to one or more incorrect symbols different from the training symbol.

1 16. The method of claim 15, wherein the determining further includes:  
2 determining if the training symbol has been decoded as one of said incorrect symbols.

1 17. The method of claim 13, wherein said running disparity code is an 8B/10B code.

1 18. The method of claim 11, further comprising:  
2 converting a second differential signal into a second sequence of code symbols;  
3 decoding the second sequence of code symbols to form a second sequence of received  
4 symbols; and  
5 determining if the second sequence of received symbols is incorrect due to inversion of the  
6 second differential signal.

1 19. The method of claim 18, further comprising:  
2 inverting sequences of code symbols for which the sequence of received symbols is  
3 determined incorrect due to inversion; and  
4 combining the sequences of received signals to form a single output symbol stream.